

INCH-POUND

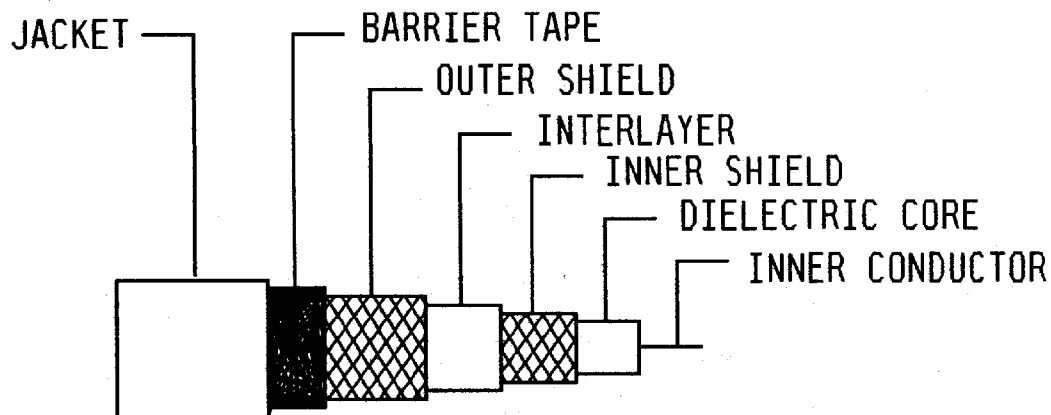
MIL-C-17/135C
13 April 1993
SUPERSEDING
MIL-C-17/135B
15 December 1987

MILITARY SPECIFICATION SHEET

CABLES, RADIO FREQUENCY, TRIAXIAL, .500 INCH, 50 OHM,
WATERBLOCKED, NON-WATER BLOCKED
AND CROSSLINKED, LOW SMOKE

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification listed in that issue of the Department of Defense Index of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-C-17.



CABLE SHOULD BE CONSTRUCTED OF NON-TOXIC MATERIAL

FIGURE 1. General configuration.

Changes to the text have been highlighted.

TABLE I. Description.

Component	Construction
Inner conductor (M17/135-00001 and M17/135-00002)	Seven strands of silver-coated copper wire each strand .0296 inch diameter. Diameter: .089 inch \pm .001
Inner conductor M17/135-00003 thru M17/135-00006)	Solid silver-coated copper wire Diameter: .081 inch \pm .001.
Dielectric core	Type A-1: Solid polyethylene. Diameter: .285 inch \pm .010.
Inner shield	Single braid of AWG No. 33 silver-coated copper wire. Diameter: .340 inch maximum. Coverage: 90%, minimum. Carriers: 24 Ends: 7 Picks/inch: 8 Separator tape optional.
Interlayer (M17/135-00001 thru M17/135-00004)	Type A-1: Solid Polyethylene Diameter: .365 inch \pm .010.
Interlayer (M17/135-00005 and M17/135-00006)	Cross-linked polyolefin. Diameter: .365 inch \pm .010.
Outer shield	Single braid of AWG No. 33 silver-coated copper wire. Diameter: .414 inch, maximum. Coverage: 85%, minimum. Carriers: 24 Ends: 8 Picks/inch: 5.11 Separator tape optional.
Barrier tape M17/135-00005 and M17/135-00006	A .001 inch thick polyester tape faced with a .002 inch thick layer of aluminum. The tape will be applied with a 50% overlap minimum, aluminum face toward the outer conductor. Diameter: .417 inch, maximum.
Jacket M17/135-00005 1/ and M17/135-00006	Cross-linked polyolefin. Diameter: .500 inch \pm .010.
Jacket M17/135-00001 1/ and M17/135-00002	Type XII: Polyurethane Diameter: .500 inch \pm .010.
Jacket M17/135-00003 1/ and M17/135-00004	Type IIIa: Polyethylene. Diameter: .500 inch \pm .010.

1/ Free strippable blocking compound needed where necessary to meet hydrostatic test. The inner shield may be partially imbedded in the dielectric. Applicable to water blocked cables only.

ENGINEERING INFORMATION:

Continuous working voltage: 3,700 V rms, maximum.

Operating frequency: 3 GHz, maximum.

Velocity of propagation: 65.9 percent, nominal.

Power rating: See figure 2.

Operating temperature range:

-40°C to +70°C (M17/135-00001 thru M17/135-00004)
-30°C to +85°C (M17/135-00005 and M17/135-00006)

Inner conductor properties:

DC resistance (maximum at 20°C): 1.62 ohms per 100 feet. (0.173 ohm per 100 feet for M17/135-00001 and M17/135-00002).

Elongation: 25 percent, minimum. (30 percent, minimum for M17/135-00001 and M17/135-00002).

Tensile strength: Not applicable.

Engineering note: This cable useful for nonhosing low temperature applications.

REQUIREMENTS:

Dimensions, configuration, and description: See figure 1 and table I.

Environmental and mechanical:

Visual and mechanical examination:

Out-of-roundness: Not applicable.

Eccentricity: 10 percent, maximum.

Adhesion of conductors:

M17/135-00001, -00003, and -00005 7 pounds minimum, 65 pounds, maximum.
M17/135-00002, -00004, and -00006 7 pounds minimum, 50 pounds, maximum.

Aging stability:

+90°C ±2°C (M17/135-00003 and M17/135-00004)
+98°C ±2°C (M17/135-00001, -00002, -00005 and M17/135-00006)

Stress crack resistance: Not applicable.

Outer conductor integrity: Not applicable.

Cold bend:

-55°C ±2°C (M17/135-00001 thru M17/135-00004)
-30°C ±2°C (M17/135-00005 and M17/135-00006)

Dimensional stability: +85°C ±2°C.

Inner conductor from core: .062 inch, maximum.

Inner conductor from jacket: .125 inch, maximum.

Contamination: Not applicable.

Bendability: Not applicable.

Flammability: Not applicable.

Flame propagation: Applicable 1/

Acid gas generation: 2.0 percent, maximum 1/

Halogen content: 0.2 percent, maximum 1/

Immersion test: 1/

Tensile strength, percent of unaged minimum: 50 1/

Elongation, percent of unaged minimum: 50 1/

Smoke index: 25 maximum 1/

Toxicity index: 5 maximum 1/

Durometer hardness: (type A) 80 minimum 1/

Weathering: Applicable 1/

Abrasion resistance: 75 cycles minimum (Jacket only) 1/

Tear strength: 35 pounds per inch minimum 1/

Heat distortion: 30 percent maximum distortion 1/

Physical tests on unaged jacket:

Tensile strength: 1,300 psi, minimum 1/

Elongation: 160 percent, minimum 1/

Physical tests on aged jacket: 1/

Air oven:

Tensile strength, percent minimum: 60

Elongation, percent minimum: 60

Hot oil immersion: 1/

Tensile strength, percent minimum: 50

Elongation, percent minimum: 50

Tensile strength and elongation: 1,300 psi, 160 percent, minimum. 1/

Weight: 16 pounds per 100 feet, maximum (M17/135-00001 and M17/135-00002).

18.5 pounds per 100 feet, maximum (M17/135-00003 thru M17/135-00006).

1/ Applicable to M17/135-00005 and M17/135-00006.

Watertightness (Not applicable to M17/135-00002, -00004 and -00006): One end of a five foot length of completed cable shall be placed in a terminal fitting which will allow water pressure to be applied directly to the exposed cross-sectional area of the end of the cable. Exposure of the sides of the cable to water shall be kept to a minimum, and the fitting shall not exert radial compression against the cable. Unless otherwise approved by the qualifying activity, the sealer used for the packing gland in the terminal fitting shall be a metal alloy having a maximum melting point of 88°C. The specimen shall be subjected to a water pressure of 25 lb_f/in² for a period of 6 hours. Any evidence of water leakage shall be a cause for rejection.

Hydrostatic (open end) (Not applicable to M17/135-00002, -00004 and -00006): A 5-foot specimen of completed cable shall be fitted into a gland similar to USL 44500B-12. The cable shall be capable of withstanding 1,000 lb_f/in² applied to the gland end of the specimen for a period of 2 hours. Any evidence of water leakage shall be cause for rejection.

Electrical:

Continuity: Applicable.

Spark test: 8,000 V rms, +10%, -0%.

Voltage withstanding: 10,000 V rms minimum applied between the inner and outer conductors with the outer conductor grounded; 500 V dc minimum applied between the outer conductor and the extra shield with the extra shield grounded.

Insulation resistance: Not applicable.

Corona extinction voltage: 5,000 V rms, minimum.

Characteristic impedance: 50 ohms ±2.

Attenuation: See figure 2.

Structural return loss: See figure 3.

Capacitance: 32 pF per foot, maximum.

Capacitance stability: Not applicable.

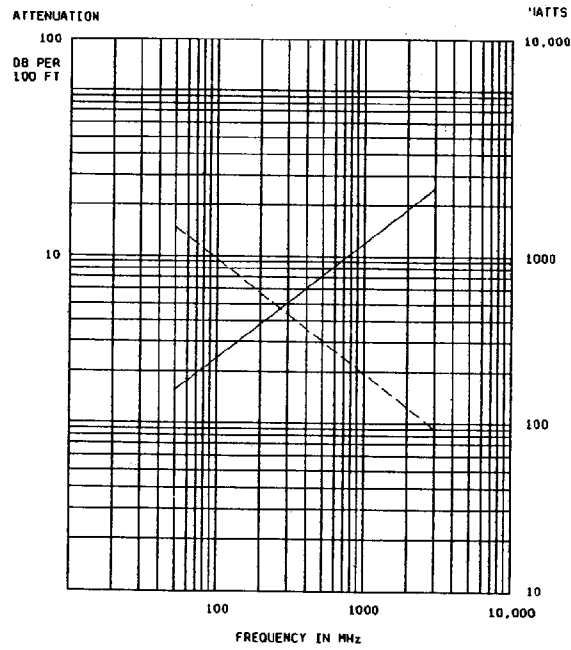
Capacitance unbalance: Not applicable.

Transmission unbalance: Not applicable.

Mechanically induced noise voltage: Not applicable.

Time delay: Not applicable.

Part number: See table II.



Maximum power - - - at 25°C sea level

Maximum attenuation _____

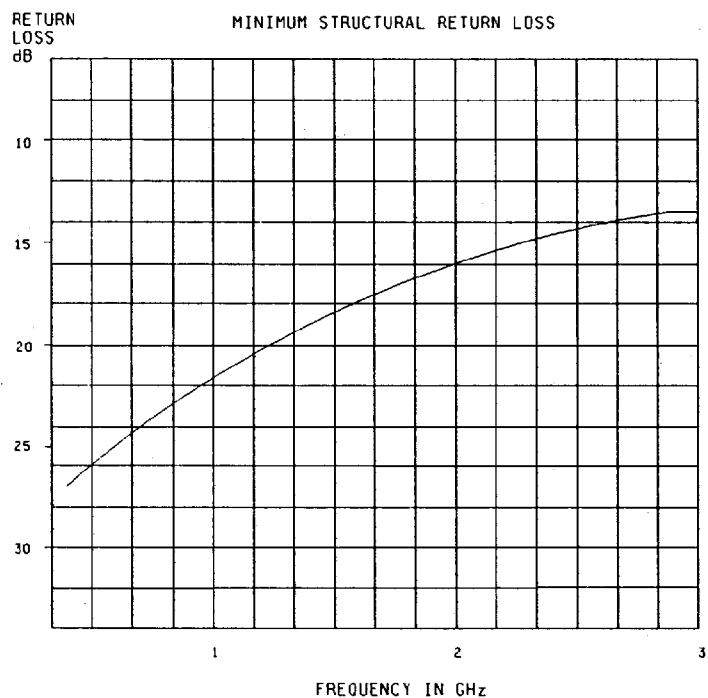
Frequency MHz	Attenuation dB	Watts dB
50	1.7	1400
100	2.6	850
400	6.4	350
1000	11.4	190
3000	23	90

Test requirements shall be as line indicated on graph.

FIGURE 2. Power rating and attenuation.

SWR	Reflection coefficient	Return loss dB	SWR	Reflection coefficient	Return loss dB
1.3767	.1585	16	17.3910	.8913	1
1.3290	.1413	17	8.7242	.7943	2
1.2880	.1259	18	5.8480	.7079	3
1.2528	.1122	19	4.4194	.6310	4
1.2222	.1000	20	3.5698	.5623	5
1.1957	.0891	21	3.0095	.5012	6
1.1726	.0794	22	2.6146	.4467	7
1.1524	.0708	23	2.3229	.3981	8
1.1347	.0631	24	2.0999	.3548	9
1.1192	.0562	25	1.9250	.3162	10
1.1055	.0501	26	1.7849	.2818	11
1.0935	.0447	27	1.6709	.2512	12
1.0829	.0398	28	1.5769	.2239	13
1.0736	.0355	29	1.4985	.1995	14
1.0653	.0316	30	1.4326	.1778	15

Frequency MHz	Min SRL
50	27.5
1000	21
2000	16
3000	13.8



(TEST REQUIREMENTS SHALL BE NOTED AS LINE INDICATED ON GRAPH)

(Test requirements shall be noted as line indicated on graph).

FIGURE 3. Structural return loss.

Supersession data: See table II.

TABLE II. Cross-reference of part number.

Part number	Superseded Part number or type designation	Type
M17/135-00001 1/	AA-3833	Water blocked
M17/135-00002 1/	TRF-8	Non-water blocked
M17/135-00003	-----	Water blocked
M17/135-00004	-----	Non-water blocked
M17/135-00005	AA-7559	Water blocked
M17/135-00006	AA-7560	Non-water blocked

1/ Inactive for new design.

CONCLUDING MATERIAL

Custodians:

Army - CR
 Navy - EC
 Air Force - 85

Review activities:

Army - MI
 Navy - SH, TD
 Air Force - 17, 99
 DLA - ES, IS

User activities:

Army - AR, AT, ME
 Navy - AS, MC, OS
 Air Force - 19

Preparing activity:

Army - CR

Agent:

DLA-ES

(Project 6145-2020)